

Oil Field Environmental Incident Summary

Incident: 20150107160242 **Date/Time of Notice:** 01/07/2015 16:02

Responsible Party: Summit Midstream Partners, LLC.

Well Operator:

Well Name:

Field Name:

Well File #:

Date Incident: 1/7/2015

Time Incident: 07:00

Facility ID Number:

County: WILLIAMS

Twp: 157

Rng: 100

Sec: 20

Qtr:

Location Description: The pipeline leak location is about 300 feet to the west of the Halcon State 157-100-29A-32-1H well pad. The saltwater pipeline right-of-way crosses Blacktail Creek, and the leak location is on the west side of this crossing. The location is at Latitude 48.40152 N, 103.63971W in Williams county, ND.

Submitted By: Andrew Parisi

Received By:

Contact Person: Andrew Parisi
999 18th Street, Suite 3400S
Denver, CO 80202

General Land Use: Pasture

Affected Medium: Surface Water

Distance Nearest Occupied Building:

Distance Nearest Water Well:

Type of Incident Pipeline Leak

Release Contained in Dike No

Reported to NRC: No

Spilled Units

Recovered Units

Followup Units

Oil

Brine 70000 barrels

Other

Description of Other Released Contaminant:

The produced water contains certain other constituents associated with formation water, and petroleum hydrocarbons.

Inspected:

Written Report Received:

Clean Up Concluded:

Risk Evaluation:

Unknown at this time. no immediate health hazards are suspected from the saltwater, and the source of the spill (pipeline) has been shut down.

Areal Extent:

Unknown at this time. Some saltwater entered the Blacktail Creek.

Potential Environmental Impacts:

Some of the saltwater brine entered the Blacktail creek on the north side of the pipeline leak. The topsoil around the pipeline leak has also been impacted and will be remediated. 1/20/15 Update - Some of the produced water entered the Blacktail Creek on the north side of the pipeline leak and has

Action Taken or Planned:

The saltwater pipeline was shutdown on the evening of 01/06/2015 and Summit Midstream employees walked the right of way to try to find the source of the leak. Once the leak location was identified, environmental response teams, and Summit Midstream first responders were immediately notified and dispatched to the location. The source of the saltwater has been taken out of service, and Summit Midstream is working as quickly as possible to contain the released saltwater brine. 9/20/15 update -The pipeline was shut down on the evening of 01/06/2015. Emergency response teams and Meadowlark Midstream first responders were immediately notified and dispatched to the location. Meadowlark mobilized company and contractor emergency personnel to perform numerous activities including but not limited to: notification and coordination with regulatory agencies; shutting-in the pipeline; placing adsorbent booms along Blacktail Creek; excavating soils and uncovering the pipeline; removing produced water along Blacktail Creek to just above the confluence with the Little Muddy River via vacuum extraction and disposal; sampling water quality in those waterbodies; and notifying potentially affected landowners and renters. Meadowlark Midstream is conducting extensive testing and sampling to determine the size and scope of the impact of the incident. Meadowlark has hired a remediation consultant, Stantec, to oversee all emergency response and remediation efforts.

Wastes Disposal Location: Unknown at this time. A revised report will be submitted as soon as more information is available. 9/20/15 update - Recovered produced water is being disposed of at regulated disposal facilities in accordance with applicable legal requirements.

Agencies Involved: NDDH and NDIC

Updates

Date: 1/7/2015

Status: Reviewed; Followup Required

Author: Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Company rep contacted NDDoH at 1:04 p.m. on 1/7/2014, notifying the Department of this spill. According to the report and the contact, this spill has impacted a local creek. NDDoH personnel are on location. Samples are to be taken in various locations to delineate the extent of the impact.

Follow-up is necessary.

Date: 1/7/2015

Status: Inspected; More Followup Required

Author: Espe, Brady

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

I arrived at the site at 4:00 p.m. Clear with winds from the southeast 10 mph with a temperature of 5°F. I met with personnel from the company. They were working on contacting contractors to bring pump trucks and other equipment to clean up the spill. They had cleanup contactor personnel assessing the spill area. The spill occurred in the northwest quarter of the section in a low area a couple hundred feet west of Blacktail Creek. You can see the line break; there was a small hole with sediment around it. The produced water had some oil mixed with it. The mixture went both north and east of the pipeline right-of-way, following low spots in the terrain. The oil stained the vegetation. The produced water ran east of the break and followed a low area. The creek is frozen in this area; the produced water mixture ran on to the ice. I could see oil mixture on top of the ice for approximately a couple hundred feet. Samples were grabbed from this area. The creek was frozen going east under Highway 85, and there was something on top of the ice directly east of bridge. The creek meets up with the Little Muddy River. The Little Muddy crosses under 66th Street south of this point. There was an open area in the ice, and the water was flowing. I took a sample at this site. I also took conductivity readings that showed 2.71 ms and 3.07 ms. I also used low-range chloride strips and had 0.8 and 0.5 units. More followup needed. 48.401417;- 103.639400

Date: 1/8/2015

Status: Inspected; More Followup Required

Author: Espe, Brady

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

I arrived at the site at 2:09 p.m. Clear with winds from the northwest 30+ mph with a temperature of 4°F. I checked the sample point at the Little Muddy, and it was still open and flowing. There is pasture around this area of the Little Muddy River on both sides of road. There appears to be no animals in the pasture area at this time. The Blacktail Creek along Highway 85 is bordered on the east side by grassland area that does not appear to be fenced and bordered on the west side (where the pipe breakage occurred) by what appears to be CRP. At the bridge you can see water on the ice; there is also snow on top of the ice. The snow is discolored for a couple hundred feet on the east side of the highway. I met with company personnel near the pipeline break. They were looking for the pipeline break, and there were also pump trucks located on the east side of the well pad. The creek flows by this area, and they have good access for pumping. It was indicated that pumping had been ongoing since 6:30 p.m. the night before. I was able to get two more water samples in other locations. One sample was taken at the bridge just west of the pipeline break, which is upstream of the spill site. Conductivity readings there showed 3.00 ms; low-range chloride strips showed 0.8 units. I then went to the site where the pump trucks were located and took a sample from this area. Conductivity readings there showed 187.4 ms and 170.3 ms. Low-range chloride strips showed 9.1 units, which is greater than 637 ppm of chlorides. The high-range chloride strip did not show anything. The pumpers were keeping up with pumping in this area; the flow in the creek was low at this point. More samples will be taken tomorrow.

Date: 1/9/2015 **Status:** Inspected; More Followup Required **Author:** Espe, Brady

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

I arrived at the site at 9:00 a.m. Clear with winds from the northwest 10+ mph with a temperature of -10 °F. The company is continuing to pump water from the creek. I continued to sample to assess the spill. More followup will be done.

Date: 1/10/2015 **Status:** Inspected; More Followup Required **Author:** Espe, Brady

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

I arrived at the site at 9:25 a.m. Clear with winds from the northwest 5 to 10+ mph with a temperature of -11 °F. The company is continuing to pump water from the creek. I continued to sample to assess the spill. More followup will be done.

Date: 1/12/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived at the recovery location at 9:35. Spoke with trucking company representative to locate release site. Drove to release location and spoke to safety representative who explained to me that they were not letting anyone into the area due to the line being pressurized; the pressure test should be finished later in the afternoon. Returned to recovery position and took EC and chloride strip samples from open water at location 48 degrees, 23.680 W, -103 degrees 36.859 N on Blacktail Creek. EC values were 167300 uS/cm and high-range chloride strip showed plus 9. Traveled to Site 2 and took EC readings and chloride test strips at 12:00. EC value was 4270 uS/cm and low-range chloride strip showed a value of 0.5. Traveled to Site 12 and collected one water sample and took EC and chloride strip readings. EC value was 7240 uS/cm, and high-range chloride strip showed a value of 6.0. Additional followup required.

Date: 1/9/2015

Status: Reviewed; Followup Required

Author: Washek, Sandi

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on site at 1:30 p.m. with Peter Wax from NDDoH. Met with reps of pipeline company, NDIC and Clean Harbors, along with Brady Espe from NDDoH, at the confluence of Blacktail Creek and Little Muddy River. We were updated on what had occurred that day. Mr. Wax and I conducted an assessment of the Little Muddy River on both Friday and Saturday. The assessment was conducted from the confluence of the Little Muddy River and Blacktail Creek down to the crossing of 1804 and the Little Muddy River. Water samples were collected, and photographs were taken.

Date: 1/15/2015

Status: Inspected; More Followup Required

Author: Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived at Hwy 1804 at Little Muddy Crossing at 8:17.

Collected group 190 water sample near site 190. Sample tested at 4.6 on the high range quantlab chloride test strip, which equates to 915 ppm chloride.

Two group 190 water samples were collected downstream.

One near the confluence with the Missouri River tested at 1162 ppm on the high-range chloride quantlab test strip. The conductivity was 6080 uS at 0.1 degrees Celsius.

Another sample was taken downstream of the Little Muddy confluence with the Missouri River. This sample tested at 307 ppm on the low-range test strip and had a conductivity of 3640 uS at 0.1 degrees Celsius.

More followup is necessary.

Date: 1/16/2015 **Status:** Inspected; More Followup Required **Author:** Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location 1/16/2015.

Collected chloride readings from the Little Muddy at 65th Street. The chloride readings read .8 on a quantlab low-chloride test strip, which equates to <31 ppm chloride.

Collected chloride readings from the Little Muddy at 66th Street read .6 on a quantlab low-chloride test strip, which equates to <31 ppm chloride. Sample collected - 2040 uS conductivity.

Collected chloride readings from Blacktail Creek which tested at 412 ppm chloride. Sample collected - 4970 uS conductivity. Water sample collected has a strong odor.

More followup is necessary.

Date: 1/21/2015 **Status:** Inspected; More Followup Required **Author:** Crowds, Kory

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

On site 1/20/2015 at 16:00. Wind west at 14 mph, overcast, 32 degrees, light precipitation. Sampled Little Muddy at 66th St and Blacktail Creek at confluence with Little Muddy; off site 18:30. On site 1/21/2015, 12:00, light wind, 32 degrees, overcast. Attempted sample at confluence of Little Muddy River and Missouri River. Unsafe ice. Collected sample approximately 150 meters downstream of railroad bridge. Off site 15:00.

Date: 1/18/2015 **Status:** Inspected; More Followup Required **Author:** Roberts, Kris

Updated Oil Volume: 70.00 barrels

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Jan 17-18: Roberts deployed to location 15:30 on 1/17 in response to report from company and consultant that more oil than was expected has been discovered and removed from the creek near the point where the leak ran east into Blacktail Creek. On 1/18, Roberts, in company with Luttschwager of ND Game and Fish, met with Stantec consultant on location and proceeded with consultation and inspection. Consultant strongly suggested installation of an underflow dam downstream of the major area of oil accumulation. During inspection, found several other smaller accumulations of oil and a major accumulation (much less than the first) at the first beaver dam downstream of the leak entry point. Recommended that an underflow dam be installed there as well, as there was a large pool behind the dam, and access to the point had already been established by rig mat road. Also strongly suggested that a vacuum truck or hydrovac system be deployed to recover oil immediately downstream of that beaver dam. Continued inspection and found several other small areas of either minor accumulation or oil staining in the creek ice. Final location recommended by the consultant was a point where the creek closely approaches the lease road for a multi-well pad just west of the church. There, consultant wanted an overflow weir to be able to control flow and as a collection point for brine-impacted water. Agreed with that, and also agreed that a final underflow dam should be established farther downstream but above the US 85 crossing. Recommended that Stantec proceed with online application for a COE 404 permit for the dams, as that had been required in previous communication with COE and NDDoH. Also inspected confluence of Blacktail Creek and Little Muddy River. Left location approximately 12:45.

Date: 1/26/2015 **Status:** Inspected; More Followup Required **Author:** Roberts, Kris

Updated Oil Volume: 90.00 barrels

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

January 23 to 26: Very mild weather, with increasing stream flows throughout the reporting period. On Jan 23, guided a USEPS OSC and accompanying Coast Guard responder from Pacific Strike Team (responding to possible Williston water drinking supply effects from the Bridger Pipeline spill effects near Glendive, MT) to location of US 85 where Blacktail Creek crosses. Discussed situation briefly, as another OSC is due on 1/24 to take active part in the investigation and response.

Jan 24: Met with assigned OSC and START contractor team and proceeded to the location. Had opening discussion with Summit and Stantec regarding the incident and system. One thing learned was that there are no backcheck valves in the system to limit a release from any one segment of the line. There are only manual block valves at various points in the system. System was brought on line in June, 2014, and inconsistencies between on Summit's metering at each input location did were not being reconciled by the disposal well owner's injection records (trucks were also delivering to the disposal well) led to the installation of flow meter at the delivery end of Summit's line. On Jan 6, Summit determined a problem and shut in the line. Monthly overflights of the system, including one on Dec 29 had not shown any surface staining to indicate a leak. On the morning of Jan 7, and on-foot inspection discovered the surfacing of the leak.

START contractors collected water samples from Blacktail Creek at location, and downstream into the Little Muddy River. Unknown volume of loss reported by Summit on Jan 7, followed by 2 other reports to NRC with increasing loss volumes to the 70,000 bbl figure led to EPA decision to send the OSC team.

START contractor was assigned to sample collection duties along Blacktail Creek and Little Muddy River. DoH and EPA began onsite inspection of response actions and full length of impact.

January 25: START continued with water sampling assignment. DoH and EPA continuing inspection of initial reach of impacted creek revealed inadequate response to the amount of oil on the creek. Began working with oil response contractor to better removal of oil on the creek. Rope skimmer was ordered, as well as snare boom pom poms used separately for oil pickup. Lower underflow dam had been completed previous to this reporting period, and middle underflow dam was being constructed during this period. Upper underflow dam just below the initial impact location has not yet begun construction. 5 test pits were dug near creek bank below the leak point. Groundwater quickly filled each pit from gravel seams, and groundwater in all pits were over-range (>7,000 mg/L) for chloride screening. EPA and DoH conference with DoH management on status and suggestions for moving forward. EPA called in additional assistance for oil collection observation from the US Coast Guard Pacific Strike Team.

January 26: DoH and START contractor collected water sample from a downstream location on the Little Muddy River on the south side of Hwy 1804 in Williston. Sample was collected for VOC, Oil, and inorganic analysis. Increased flow in Blacktail Creek in the impact reach began damaging and overflowing the middle underflow dam, and overflowing the lower underflow dam. Pumping from the creek was completely eclipsed by the flow in the creek. At the lower underflow dam, Cl titration strip recorded concentration in the overflowing water at 5,332 mg/L, at the middle underflow dam/recovery pumping station Cl screen was at 410 mg/L, and at the proposed upper underflow dam location, Cl screen was below detection level for the high range titration strip. Conference call between DoH/EPA team and DoH Management determined to cease water recovery operations from the creek due to excessively high flow, and move interim focus to collection of impacted groundwater between leak point and creek.

January 27: DoH and EPA met DoH replacement inspector and briefed. Met with Summit and Stantec on transition. Water still greatly overflowing the lower underflow dam, and middle one is mostly washed out. Picked up Williston drinking water samples (from Yellowstone River incident) and couriered to Bismarck, arriving at lab at 16:30 approximately. Reported in at office and briefed managers. End of report.

Date: 1/28/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

1/28/2015 at 9:00, on location.

Met with site personnel including responsible party and consultant, as well as EPA responders. Temperatures are starting to drop (currently 30 degrees Fahrenheit); however, conditions are still muddy around release point. Rig mats are being installed to the release point so that recovery trenches can be installed. Trench digging is planned for the afternoon.

Just downstream of the release point, rope-mop skimming has removed ~6 barrels of oil sheen/water mix since yesterday. Rope-mop skimming is being kept in operation to keep it from freezing up. A weir skimmer has been requested to replace the rope-mop.

For the underflow dams, once waterflow decreases, they will be repaired and the final dam will be built. It has been requested that they be modified to allow a greater volume of water to pass underneath, to avoid the current situation with water overtopping the dams. According to USACE, water is currently going through the spillway upstream at Blacktail Dam. This will hamper efforts to build any dams at the release point.

No pumping of the creek has occurred due to the amount of water in the stream at this time. Previously collected water has been disposed of at six different salt water disposals. Ice that has been removed as part of the containment process has been stockpiled on a lined portion of the bank; it was suggested that this be placed in with the impacted soil piles.

Sampling by NDDoH will occur later today along the Blacktail and Little Muddy creeks, and the company consultant will be sampling as well once equipment is acquired for deep water samples in and around the Missouri River confluence.

Date: 1/27/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

1/27/2015, on location. Toured location of release as well as points along Blacktail and Little Muddy creeks throughout the day with company, state, and federal personnel. Due to warmer than usual temperatures, ice thickness has decreased, making access on to the ice unsafe as well as bringing large amounts of water into the creeks. This has caused the underflow dams installed near the release point to be overtopped. Closer to the release point, a rope-mop skimmer is in use due to a lack of ice, working to remove visible sheen from Blacktail Creek.

Date: 1/29/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

1/29/2015 at 9:40, on location. 30 degrees Fahrenheit.

Met with site personnel and EPA personnel. Trench is being finished this morning to start determining groundwater impact; will be complete today. Oil pipeline tested last night and passed its tests. Fiberglass saltwater line (the line involved in the release) continuing to be tested, but it is currently at low pressure (~300 lb) so that cleanup work can proceed in the area. Water well test results have been finalized and will be communicated to involved agencies.

Pumping on east side of creek is fully functional. West side of creek is still being set up, depending on what volumes of groundwater the trench produces. Downstream of site and east of Highway 85, a third pumping location is also functional, with 1470 bbl total pumped yesterday.

Yesterday, 6-7 bbl of oil/water mix removed from creek with the rope-mop skimmer, which is still in operation today. The booms placed behind the skimmer will be reoriented from a perpendicular orientation in respect to the creek to a more oblique angle, so that oil is moved closer to the collection bank.

Continuous monitors for the creek have been sourced and are being flown to the site. One turtle was found along the creek; it will be sent to the state once a protocol on how to do so is established.

High EC readings taken from puddle near the release trench late last night (>7000 ppm chlorides); this puddle will be sucked out once equipment is available. Currently, plans are to berm off a large pool of runoff/creekwater from the creek with clay and eventually a geotextile/rock layer to prevent it from draining into the creek. Pool was also tested yesterday; reading of ~141 ppm chlorides.

Plans are to rebuild underflow dams over the weekend once the flow decreases.

Date: 1/31/2015 **Status:** Inspected; More Followup Required **Author:** Washek, Sandi

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on site at 3:30 p.m. Weather was 5 degrees C, with snow and wind west at 15-20 mph.

Met with company rep and the U.S. Coast Guard. Toured the work site. The company was continuing to lay road mats for access into work area. They started removing ice from Blacktail Creek and the stockpiles of ice along the creek for disposal. Ice is being disposed of at Secure Energy 13 Mile treatment facility.

Finished the trench and installing another pump. Since yesterday, pumps have removed approximately 70 barrels of water into the holding tanks. Blacktail Creek is still running high. Will begin installing flow-over dams when water drops.

Date: 2/1/2015 **Status:** Inspected; More Followup Required **Author:** Washek, Sandi

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

2/1/2015 at 9:15 a.m. on location. -8 degrees Fahrenheit.

Kris Roberts and I met with site personnel and U.S.Coast Guard personnel for update. Company finished laying mats in the work area. All chloride readings taken in Blacktail Creek this morning by the company were between 101-260 mg/L. In addition, company has removed seven truckloads of ice. They estimate another seven to eight truckloads of ice piled on shore and from the creek will be removed today. It is estimated another 10-15 truckloads of ice are left to remove from the creek. They plan to continue ice removal while the weather is still cold. In addition, they are gearing up for warmer weather next week so they can continue working. Total amount of liquid shipped out so far is approximately 460 barrels from the interception trench.

Company also finished up the electromagnetic survey and will have data available later tonight, which will be sent to NDDoH. Company is working on the installation of continuous monitors and plans to start geo-probing on Monday or Tuesday. Company plans to have the rest of the containment dams finished once the water levels drop. Stantec will be sending sediment and soil plans and the biological assessment plan to the NDDoH.

NDDoH personnel took conductivity, pH and chloride readings on Blacktail Creek and the Little Muddy River. Will be updated in the file.

Date: 2/2/2015 **Status:** Inspected; More Followup Required **Author:** Washek, Sandi

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

2/2/2015 9:30 a.m. Weather was overcast, 10 degree Fahrenheit with wind out of the northeast 15 mph.

Met with company reps, U.S. Coast Guard and Stantec personnel for an update. The company is going to continue to remove ice from the creek and is working on disposal of the ice. Company figures this work will be ongoing. Since Friday, they have removed 10 truckloads of ice from the site. In addition, all morning chloride readings come in between 31-401 ppm.

They plan to install another sump pit by the land bridge. They also plan to put in another trench northwest of the pipeline break but have to coordinate with utilities in that area. Location should be flagged in today. The geoprobe should be in today and start work on Tuesday.

The company plans to install submersible pumps into the sumps to maintain flow in the interceptor trench. The electromagnetic map will be provided to NDDoH by this afternoon. It was noted that water levels in the creek are still flowing but starting to drop slightly.

On Saturday January 31, the firm did pump water out of Blacktail Creek near landowner's house due to elevated chloride readings taken that morning in the Blacktail Creek area.

NDDoH reps walked Blacktail Creek and noted visible oil on top of ice between the pipeline break and Hwy 85; took pictures. In addition, EPA rep arrived onsite at 3:30, Mr Roberts gave Kerry Guy a tour of the work area. NDDoH rep visited with the landowners east of Hwy 85 to check up with them to see if they had questions. Will provide the landowners stream testing information as they requested. Will be collecting well water samples at this site on Tuesday.

Date: 1/30/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

1/30/2015 at 9:40, on location.

Met with consultants and company personnel, as well as EPA and U.S. Coast Guard members. Interceptor trench installed and working. More flow coming from south sump, but concentration of chlorides is higher in north sump, so pumping is focused on northern portion. Pumps were run for a few hours until pipeline testing. Fiberglass line tested had a noticeable leak of the mercaptin used to test the line; the line will be further examined to determine leak. Additional pressure testing will be postponed to allow longer pumping times.

Rope-mop skimmer still in use. Nine skimmer containers of oil/water mix removed from the creek. Still looking to replace skimmer with a weir skimmer due to concerns about ice freezing up the rope-mop. Boat was used to remove ice from creek. It is a local boat and decontaminated before use. Invasive species concern appears to have been addressed.

Oil booms/pom poms that have become loose due to high water are being periodically collected.

Hydrocarbon sheen visible during SCAT survey in spots of Blacktail Creek above confluence with Little Muddy. SCAT survey will be extended south of confluence today.

Date: 2/3/2015

Status: Inspected; More Followup Required

Author: Roberts, Kris

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

2/3/15 - Roberts and Washek on location. Snow showers and 10 degrees F with brisk wind.

Collected full set water sample from Site 119 (Little Muddy River on south side of Hwy 1804 bridge, in Williston) with EPA OSC, before arriving at the command post for the morning meeting at 10:00. Stantec led the reporting. Summit on-site supervisor being rotated out.

Clean Harbors reports seven loads of ice (estimated 100 bbls/load) delivered to Secure Energy Services on 2/2, for a total so far of 17 loads. Removal continues until most impacted ice area is removed, then move on to "cherry picking" areas of oil-entrained ice removal. EM-31 survey has resumed; working to map stream and groundwater impact to US-85 and beyond. Geoprobe on site and beginning to ground truth EM survey with LIF/soil conductivity profiles. Discussed need for physical sampling to distinguish between natural mineralization and NaCl impacts.

Four sump pumps were to arrive today for installation in the interceptor trench sumps. They will operate on a float-control system. Yield from the initial interceptor trench with northwest extension has dropped to approximately 5 gpm. Yield from the new interceptor trench at the earth bridge area was 250 bbls since completion on 2/2. More trenches are planned, specifically to the north of the leak point. However, due to presence of Oneok gas line in area, will need to wait on Oneok personnel to arrive on 2/5 for consultation as to setback.

SCAT inspections are continuing with similar results - periodic HC sheen on Blacktail Creek upstream of Hwy 85, with nothing detected in the Little Muddy River. Chloride concentrations by titration strip at the four pre-meeting locations were: #409 - 72 mg/L, #400 - <33 mg/L, #402 - 323 mg/L, and #405 - 233 mg/L.

Pumping from the creek has been discontinued based on chloride screening below 1,000 mg/L while stream flow is high. Exception for last few days was at two legs of the cut off oxbow at a neighboring farm. Levels of 600 mg/L were deemed too high to leave in that location. Concentrations are now below 300 mg/L, and pumping has not resumed today. Water samples from the private wells at that farm were collected today, as well as at two other locations on Blacktail Creek, sites 106 and 109. All samples were transferred to other NDDoH emergency response team members for delivery to the NDDoH lab in Bismarck.

Geoprobe work will resume on 2/3, working from US-85 toward the west.

Date: 2/4/2015

Status: Inspected; More Followup Required

Author: Washek, Sandi

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

2/4/15 - Roberts and Washek on location. Clear skies -10 degrees F with brisk wind. Collected full set water sample from Site 114 - Little Muddy River crossing at 60th Street NW and Site #200 - Blacktail Creek west of Hwy 85, along with EPA OSC, before arriving at the command post for the morning meeting at 10:00 a.m. Stantec led the reporting. Clean Harbors reports seven loads of ice (estimated 100 barrels/load) delivered to Secure Energy Services yesterday. Removal continues until the most impacted ice is removed, and will then move on to "cherry picking" areas of oil-entrained ice removal. Meeting today at 1:00 p.m. to discuss ice removal areas. Roberts collected two ice samples near land bridge. EM-31 survey has resumed; working to map stream and groundwater impact to US-85 and beyond. Working today on the north side of Blacktail Creek and then east towards Hwy 85. Geoprobe on site, and work is starting today along Hwy 85 and working west towards pipe break area. Number 1 goal today and this week is to delineate the extent of high electrical conductivity. Another geoprobe is expected tomorrow morning to conduct chemical screening to delineate brine areas.

Interception trench #3 located near the land bridge removed 70 barrels of liquid yesterday.

Interception trenches #1 and #2 had sump pumps installed in them. They are operating on a float-control system. More trenches are planned. Building of containment cells is planned -- one east and one west of the current soil containment cell. This will help segregate liquids and soil as needed. Shoreline Cleanup Assessment Technique (SCAT) inspections are continuing with similar results -- periodic hydrocarbon sheen on Blacktail Creek upstream of Hwy 85, with nothing detected in the Little Muddy River.

Chloride concentrations by titration strip at the four pre-meeting locations were: #409 - 347 mg/L, #400 - <33 mg/L, #402 - 191 mg/L, and #405 - 214 mg/L.

A continuous conductivity monitor was installed at the lower underflow dam location. They will be working on getting one installed on Blacktail Creek north of the confluence of the creek and Little Muddy River. Washek visited with the landowner located east of Hwy 85. Water samples were collected from the Lutheran Church private well located on Hwy 85 and 68th Street NW. NDDoH personnel visited Blacktail Creek to ascertain the amount of water being released from Blacktail Dam.

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

2/5/15 - Roberts and Washek on location. Sunny, 10 degrees F with light wind.

Met with EPA-OSC before arriving at the command post for the morning meeting at 10:00. Stantec led the reporting. Clean Harbors reports five loads of ice (estimated 100 barrels/load) delivered to Secure Energy Services yesterday with 31 loads so far for the project. Removal continues until the most impacted ice is removed and then will move on to "cherry picking" areas of oil-entrained ice. Two geoprobes are on site, and work is occurring to ground truth electric magnetic (EM) survey with laser-induced fluorescence (LIF)/soil conductivity profiles. Second geoprobe setting temporary piezometers for collection of groundwater samples for chloride screening.

Interception trench #3 located near the land bridge removed 220 barrels of liquid yesterday.

Interception trench #1 south side pump removed 245 barrels, and interception trench #2 north sumps removed 100 barrels of liquid yesterday. Interceptor trenches #4 and #5 are located near monitoring well #6 along the north overland flow path. They are laying pipe to these sumps due to site access issues. More trenches are planned, but exact placement is still being discussed.

Construction of additional containment cells is beginning today on the east and west sides of the current soil containment cell. The goal is to segregate frozen liquids and impacted soil. Construction will be completed the week of 2/9, with plans to lay in the poly liners on 2/10, based on a calm wind weather forecast.

SCAT inspections are continuing with similar results - periodic hydrocarbon sheen on Blacktail Creek upstream of Hwy 85, with nothing detected in the Little Muddy River.

Chloride concentrations by titration strip at the four pre-meeting locations were: #409 - 373mg/L, #400 - 81 mg/L, #402 - 148 mg/L, and #405 - 430 mg/L. #413 - 2,411 mg/L was added today. This site is located in the west "dead" segment of the cut-off oxbow of Blacktail Creek on the Njos property. Pumping of that section is being restarted today, warmer weather permitting. Previous pumping was curtailed due to equipment freezing on 2/3 and 2/4.

A continuous conductivity monitor was installed near location #200 to test the installation procedure in the 2" stilling well pipe. The monitor will be moved to the end of Blacktail Creek, upstream of the confluence with the Little Muddy River on 2/6.

NDDoH provided Summit and Stantec an email from the Division of Air Quality stating that impacted soil from the Summit Midstream pipeline leak is not being classified as TENORM. This decision will assist in the acceptance of the impacted soil at a local oilfield waste landfill.

Washek conducted an investigation at another work site. Roberts and EPA-OSC attended a meeting with the U.S. Army Corps of Engineers and N.D. Game and Fish biologists, followed by a site tour for the Corps people.

Roberts and Washek collected field conductivity and pH monitor readings and chloride screens at site #119, 114, 109, 106 and 200 at the end of the day.

Site	Cl (mg/L)	pH	Cond (mS/cm)	Temp (deg C)
119	135	7.54	2.58	0.3
114	91	7.34	2.55	0.3
109	191	7.27	3.03	0.7
106	462	7.43	4.18	0.3
200	462	7.67	4.09	0.3

Readings were provided to Stantec command post.

Sample coolers were re-iced for transport to laboratory on 2/6.

Date: 2/6/2015

Status: Inspected; More Followup Required

Author: Washek, Sandi

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

2/6/15 - Roberts and Washek on location. Partly cloudy, 15 degrees F with light wind.

Arrived at the command post for the morning meeting at 10:00 a.m. Stantec led the reporting. Army Corps of Engineer rep attended meeting. Clean Harbors reported the first section of ice removal is completed. They plan to clean up the shore area where ice was piled today and then move downstream where removal will continue until the most-impacted ice is removed.

Interceptor trenches #4 and #5 are located near monitoring well #6 along the north overland flow path. From interceptor trench #4, they removed 120 barrels of liquids yesterday and another 130 barrels this morning. In addition, they have another 120 barrels of liquids left in a holding tank to remove (total of 370 barrels). They had to lay pipe to these sumps due to site access issues. More trenches are planned, but exact placement is still being discussed. In addition, plans are underway to start collecting water samples from the interceptor trenches and send to lab for analysis. Start date for this has not yet been scheduled.

Additional containment cell construction began today on the east and west sides of the current soil containment cell. The goal is to segregate the frozen liquids and impacted soil.

Shoreline Cleanup Assessment Technology (SCAT) inspections are continuing with similar results - periodic hydrocarbon sheen on Blacktail Creek upstream of Hwy 85, with nothing detected in the Little Muddy River.

Chloride concentrations by titration strip at the four pre-meeting locations were #409 - 401mg/L, #400 - 400 mg/L, #402 - 191 mg/L, and #405 - 269 mg/L. #413 - greater than 6,566 mg/L. #413 was added yesterday. This site is located in the west "dead" segment of the cut-off oxbow of Blacktail Creek on the Njos property. Pumping of that section occurred, and 620 barrels of liquids were removed. Will continue pumping as long as area is elevated.

A continuous conductivity monitor was installed on Blacktail Creek north of the confluence with the Little Muddy River today. Stantec is considering installing another continuous monitor upstream of the spill site on Blacktail Creek.

Stantec plans to collect water samples from the Missouri River and Little Muddy River confluence area by airboat on 2/7.

The firm is planning to work on the #1 underflow dam before the ice flows again if the water levels on Blacktail Creek drop enough to do so safely.

Washek and Roberts conducted an investigation at another work site. Roberts took water samples back to Bismarck 2/6 to deliver to NDDoH State Lab. Washek will remain on site until 2/8.

Date: 2/7/2015

Status: Inspected; More Followup Required

Author: Washek, Sandi

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Met with team at 9:30 a.m. EPA-OCS and Army Corps of Engineer reps on site for the meeting. Stantec started with an update of what was accomplished yesterday.

* Finished up with ice removal work near spill containment dam (SCD) #1. Total of 39 loads of ice removed which equates to 3,900 barrels of liquid. Will continue some of the ice removal as the work on the construction of SCD #1 occurs today. Water levels have dropped in Blacktail Creek, but expect high temps today.

* Liquid removed from the various interceptor trenches are as follows: interceptor trench #1 - 100 barrels, #3 - 120 barrels, and #4 - 480 barrels. They did not get to #5 but plan to pump it 2/7. In addition, Stantec is going to start collecting water samples from the sumps located in the various interceptor trenches and send in for lab analysis. They are trying to see if they can start tracking chloride trends in each trench.

Chlorides field survey from Stantec is as follows:

#400 = <33mg/L

#402 = 301mg/L

#405 = 575 mg/l

#409 = 401mg/L

#413 = greater then the chloride strip of 6500 mg/L. The firm has continued pumping this area. It is a backflow area of Blacktail Creek. Was also informed that, if the levels of chloride in the creek keep going up, they plan to start pumping the creek in various areas again.

* Continuous conductivity monitor/logger was installed in Blacktail Creek north of the confluence of the Little Muddy River. Will do a download today for data.

Army Corps of Engineers requested that Stantec let its field people know to identify themselves and explain what they are doing if a ranger or Corps person approaches them when they are on Corps land. Corps rep also provided to Stantec/Summit some maps delineating Corps land.

SCAT report is the same as it has been for the past two days. No sheen on the Little Muddy River or past Hwy 85. One of the Coast Guard personnel will accompany the SCAT team on its next inspection as requested by EPA-OSC to ensure no sheen is occurring.

Stantec has field samplers out collecting water samples today using airboats on the confluence of the Little Muddy River and Missouri River.

NDDoH rep informed Stantec that the U.S. Geological Survey will be on site sometime next week conducting work.

4:00 p.m. The weather was 44 degrees Fahrenheit. Snow was melting, and water was starting to flow towards the creeks. Inspected Blacktail creek to observe the water/ice conditions of the creek. Ice was melting in some spots on the creek.

Date: 2/8/2015

Status: Inspected; More Followup Required

Author: Washek, Sandi

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

2/8/15 - Washek on location. Freezing rain still occurring, 28 degrees F with light wind. Everything is covered with glare ice.

Arrived at the command post for the morning meeting at 9:30 a.m. Due to the weather and hazardous driving conditions, some tasks were running behind schedule. Stantec led the reporting. The two main areas that will be focused on today are work on the containment cells for soil and liquids and finishing the construction of underflow self containment dam (SCD) #2.

SCD #1 was finished last night, and a small geo-textile wrap clay and rock-covered dike was installed along the north side of the creek to prevent water/ice from breaching the area during high-flow events.

Clean Harbors removed two truckloads of ice yesterday. They are also working on mopping up the area around SCD #1. They plan to have the long-reach excavator working in the area around SCD #2 removing ice. The plan is to remove ice all the way to the land bridge.

It was noted that, due to thawing temps yesterday and melting snow, hydrocarbons were being released from the ice-covered vegetation along the shoreline near SCDs #1 and #2 to the land bridge. Pom poms/absorbent booms were installed to collect any oil sheen that is produced due to the ice removal and the melting water in the creek. EPA-OSC Kerry Guy reminded everyone not to walk in the sediment in the creek bed to prevent any oil from being trapped in the sediment.

Interceptor trenches #4 and #5 are located near monitoring well #6 along the north overland flow path. Stantec noted that sump #5 was not producing as well as the sump in the interceptor trench #4. Exact number for liquid removal was not available at the meeting due to trucks being pulled off the roads because of road conditions. In addition, yesterday's water samples were collected from all sumps located in all interceptor trenches. Samples will be sent out to labs on 2/9. Stantec indicated that no sheen was observed in any of the interceptor trench sumps yesterday.

Containment cell construction will continue on the east and west sides of the current soil containment cell. The goal is to segregate frozen liquids and impacted soil. Work will continue on this through tomorrow. The liner crew is scheduled to arrive on 2/9.

Shoreline Cleanup Assessment Technology (SCAT) inspections are continuing with similar results - periodic hydrocarbon sheen on Blacktail Creek upstream of Hwy 85, with nothing detected in the Little Muddy River. U.S. Coast Guard personnel are working with the SCAT crew in the area where ice removal is occurring.

Chloride concentrations by titration strip at the four pre-meeting locations were: #409 - 400mg/L, #400 - <33 mg/L, #402 - 520 mg/L, and #405 - 520 mg/L. #413 - 4,078 mg/L. This site is located in the west "dead" segment of the cut-off oxbow of Blacktail Creek on the Njos property. Plans are in the works with the property owner pertaining to a better setup for pumping in this area. Will continue pumping in this area as long as it is elevated. Stantec and Summit are preparing a plan on this issue. Stantec is working on the soil disposal issue.

A continuous conductivity monitor was installed on Blacktail Creek north of the confluence with the Little Muddy River. Stantec is considering installing another continuous monitor upstream of the spill site on Blacktail Creek.

Stantec collected water samples from the Missouri River and Little Muddy River confluence area by

airboat on 2/7.

Washek collected meter readings for pH, conductivity and chloride strip field readings from sites #200, 106, 109 and 114. Washek will remain on site until 2/9.

Date: 2/9/2015

Status: Inspected; More Followup Required

Author: Washek, Sandi

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

2/9/15 - Washek on location. Foggy with light drizzle still occurring, 22 degrees F, light wind.

Arrived at the command post for the morning meeting at 9:30 a.m. Stantec led the reporting. Work will continue on the containment cells for soil and liquids. They plan to survey the elevations of the containment cells and start installing the liner on 2/10. Depending on how work progresses, they hope to have all the work completed by 2/12. In addition, they plan to finish the construction of underflow self-containment dam (SCD) #2. They are having problems with high water around SCD #2 due to an old beaver dam. They have pumped the area and only dropped the water level by about 1 inch. They need to drop it by 1 foot in order to finish SCD #2.

Clean Harbors removed two truckloads of ice yesterday and may take out additional loads today. They are also working on mopping up the area around the land bridge. The plan is to remove ice all the way to the land bridge. It was noted that, due to thawing temps and melting snow, hydrocarbons were being released from the ice-covered vegetation along the shoreline near SCDs #1 and #2 to the land bridge. Pom poms/absorbent booms are still in place to collect any oil sheen that is produced due to the ice removal, SCD construction and the melting water in the creek. In addition, Clean Harbors rep indicated that there are light, visible hydrocarbon deposits on top of the ice in the middle of creek, but they are frozen in place due to the freeze-thaw cycle occurring. They did attempt to remove the material by hand mops, but it is frozen under a cover of ice. Stantec and Clean Harbors are considering additional methods and developing a plan to contain and clean up the hydrocarbons that are trapped under and in the ice during the thaw cycles.

Shoreline Cleanup Assessment Technology (SCAT) inspections are continuing with similar results - periodic hydrocarbon sheen on Blacktail Creek upstream of Hwy 85, with nothing detected in the Little Muddy River. U.S. Coast Guard personnel are working with the SCAT crew in the area where ice removal is occurring and doing visits west of Hwy 85 looking for any hydrocarbons that may have come out of the banks during the thaw.

Stantec informed everyone that the U.S. Army Corp of Engineers provided maps for Corps land and water sampling lab data on the Little Muddy and Missouri rivers. NDDoH rep on site requested a copy of that information to be provided to NDDoH.

Stantec is going to do survey work along a Blacktail Creek tributary stream that runs south from the land bridge to determine the elevation where it actually terminates, since current maps do not provide a clear delineation. It will also provide data to see if additional trenches/sumps need to be installed in this location.

Chloride concentrations by titration strip at the four pre-meeting locations were:

#400 = 46 mg/L

#401 = 72 mg/L

#402 = 231 mg/L

#405 = 655 mg/L

#409 = 418 mg/L

#413 = 656 mg/L

#413 - This site is located in the west "dead" segment of the cut-off oxbow of Blacktail Creek on the Njos property. Will continue pumping in this area as long as it is elevated. Stantec and Summit are preparing a plan on this issue.

A continuous conductivity monitor is going to be installed on Blacktail Creek west of 137th St NW

upstream from the pipeline break to provide background data. A new trailer will arrive on 2/10 to provide additional room for meetings and work areas.

Date: 2/10/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 9:00. Attended morning briefing with Summit rep, consultants, contractors and U.S. Coast Guard. Meeting noted that stream control dam (SCD) #1 was operational, and SCDs #2 and #3 were primarily operational. All the monitoring wells were completed, and a schedule had been set up for timely monitoring with a report due out next Tuesday. A survey team was on site to survey interceptor bridges, containment cells and land features. Booms had frozen into creek, and the plan was to break up ice and reset booms that morning.

Chloride strip readings were reported as:

Location	ppm
SW-13	6536 ppm
409	520 ppm
400	46
405	154
SCD-3	855
SW-402	168

Barrels of water removed from sump areas were reported as:

Location	barrels
IT-1S	120
IT-2S	120
IT-3S	120
IT-4S	390
IT-5S	260

Meeting with the landowners, consultant and Summit at 12:30. Summit and its consultant proposed constructing an extraction pump within the oxbow area west of the landowner's residence. They also proposed conducting more terrain conductivity measurements near the oxbow with additional physical, geoprobing after electromagnetic results to determine impacts beyond the stream boundaries. Work and assessment plan will be forwarded to the NDDoH for the oxbow portion of the remediation.

Followed up at the end of the day for confirmation of work completed. According to the lead consultant, work was suspended around 14:00 due to soil conditions where vehicles could not move and were getting stuck. Weather conditions were also dangerous with a temperature of 16 degrees F, 25-30 mph winds (-30 wind chills) and cloudy. Pumps will run throughout the night until frac tanks are full, then automatically shut down, with planned removal tomorrow.

More followup needed.

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 9:00 a.m. Attended review/safety meeting from 9:30 to 10:30. According to the operations manager, removal of sump water from the frac tanks had resumed that morning and was proceeding normally to lower levels in the tanks for automatic, night pumping operations. Installation of the containment liner was put on hold due to cold weather and high winds. The electromagnetic survey contractor had been contacted and will be on location tomorrow to begin mapping the oxbox area.

There was discussion regarding continuing with the geoprobe when the One-Call has been completed for the high chlorine-impacted areas and an area along the creek just south of the the landowner's residence.

Drove site and took photos of the creek, stream containment dikes, sumps, stream gauges, containment areas and monitoring wells.

Collected field measurements from three designated locations:

Site #109 - EC (3160 us/cm), Cl (161 ppm)

Site #106 - EC (6340 us/cm), Cl (784 ppm)

Site #200 - EC (6750 us/cm), Cl (930 ppm)

Met with consultant before departing to get update and was informed of their plan to keep hauling water from sumps, continued observance of daily chloride levels at monitoring locations, electromagnetic survey beginning tomorrow and construction of the liner into containment areas for soil placement beginning tomorrow.

Continued monitoring needed.

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Attended safety/review meeting from 9:30 a.m. to 10:15 a.m. There was discussion about the construction of the liner for the containment areas, electromagnetic survey commencing along oxbow area, and continued pumping of sumps.

According to the lead consultant, drawdown of sumps along the creek had reached a level where the pumps were no longer continually pumping, and recharge of the sump areas was slower than what the pumps could move to the frac tanks. Hauling of water with trucks will continue.

Around 1:00 p.m., a backhoe was utilized to remove ice from Blacktail Creek at Site 200. Trucks were also at the location after the ice had been removed to vacuum water out of the creek from the open area.

Water samples were collected by NDDoH representatives at site 200, 106, 109, 114 and 119 for DRO, VOC and Group 19 laboratory analysis.

Field measurements for the locations showed:

Site 106 (EC - 6950 us/cm, Cl - 1011 ppm)

Site 109 (EC - 3130 us/cm, Cl - 161 ppm)

Site 114 (EC - 2920 us/cm, Cl - 112 ppm)

Site 119 (EC - 1130 us/cm, Cl - <33 ppm)

Water samples will be delivered via NDDoH inspector to NDDoH laboratory tomorrow 2/13/15 for analysis.

NDDoH inspector was accompanied by one of the consultant's representatives during sampling.

Review meeting was not attended due to extended time collecting water samples.
Further followup required.

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived at meeting location at 9:15 a.m. Attended safety/operations meeting until 10:15. Situations discussed during the meeting: geoprobe was operational and mobilizing to the oxbow area to collect soil samples along oxbow banks. Trucks are continuing to haul water from creek at extraction pump locations (IT-1, IT-2, IT-3, IT-4 and IT-5). Liner was installed in containment areas. SCAT team recovered hydrocarbon products at three locations and did not observe any hydrocarbon products along the Little Muddy River. Erosion control was to be installed in vulnerable areas. Electromagnetic survey had been completed along the banks of the oxbow west of landowner residence.

Collected field measurements in the afternoon.

Site #109 (EC - 3150 us/cm, Cl - 161 ppm)

Site #106 (EC - 7240 us/cm, Cl - 1011 ppm)

Site #200 (EC - 8020 us/cm, Cl - 1097 ppm)

Met with representatives before departure and was informed of extra water removal from the Blacktail Creek via vac trucks at BC-200, SCD-3, SW-413 and SW-407 during the day.

Electromagnetic survey had been completed along the south side of Blacktail Creek from the east side of Highway 85 to an area just west of the Blacktail/Little Muddy confluence (approximately Site 106). Another extraction sump was being installed during our meeting near SCD-2. Weather conditions in the 30's F, sunny to mostly cloudy and light winds most of the day.

Further followup required.

Date: 2/14/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 9:15 a.m. Attended operations/safety meeting with Summit representative and consultant's representatives. Points covered during the meeting were:

Pumping of interceptor trenches continued. IT-4 yielding the most water and possible chloride level drop at that location.

Electromagnetic survey was on hold due to equipment failure.

Geoprobng was continuing along oxbow bank (SW-413).

The SCAT team identified a few isolated areas with petroleum impacts and would try to remove tomorrow with warming weather.

No petroleum impacts were noted any further along the Blacktail than the landowner's residence.

No petroleum impacts noted on the Little Muddy either.

Collected field measurements in the afternoon.

Site 109 (EC - 3190 us/cm, Cl - 148 ppm)

Site 106 (EC - 7890 us/cm, Cl - 1097 ppm)

Site 200 (EC - 7930 us/cm, Cl - 1097 ppm)

Attended end-of-day assessment meeting and was informed that three more interceptor trenches had been completed (IT-6, IT-7, IT-8) with three more in progress. Pumps were needed for operations in the trenches and should be ready tomorrow.

Further followup needed.

Date: 2/15/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Attended operations/safety meeting at 9:30 a.m. Points covered included continued hauling of groundwater/creek water at locations along the creek and the five interceptor trenches. SCAT team was hoping to collect the few hydrocarbon impacts observed yesterday with some warmer weather. Pumps for the new interceptor trenches should be available Monday or Tuesday to make trenches operational for groundwater retrieval. 12 trucks operational for hauling water away from location.

Field measurements collected in the afternoon showed:

Site 109 (EC - 2750 us/cm, Cl - 33 ppm)

Site 106 (EC - 10500 us/cm, Cl - 1505 ppm)

Surface of ice in this location was covered with slushy water approximately 4 to 6 inches in depth. Part of sample may include a portion of the water column above the ice.

Site 200 (EC - 7830 us/cm, Cl - 1011 ppm)

Traveled around operations and took photographs.

More followup needed.

Date: 2/16/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 8:00 a.m. 24 degrees F, overcast, light snow flurries, N/NW wind 10-20 mph.

Collected field measurements from three locations:

Site #109 (EC - 3090 us/cm, Cl - 123 ppm)

Site #106 (EC - 8690 us/cm, Cl - 1505 ppm)

Site #200 (EC - 8000 us/cm, Cl - 1097 ppm)

Attended operations/safety meeting at 9:30. Topics discussed:

Continued pumping and hauling of groundwater from interceptor trenches and from high chloride concentration locations from the creek. Pumps should be in tomorrow for installation and operation of newly installed interceptor trenches. Preliminary geoprobing of oxbow area showed sharp demarcation between high chloride readings and low (background) readings in areas further away from oxbow. SCAT team has identified seven areas between release and landowner residence needing petroleum removal. Removal of petroleum product will not be completed until weather warms enough for easy removal of product.

More followup needed.

Date: 2/18/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

2/18/2015 at 9:45, on location. Met with consultants and other site personnel.

Site updates: 15 sumps have been installed so far. Pumping from Blacktail Creek is continuing. Due to access issues, data collection to the east of Highway 85 from the release site is currently on hold. SCAT survey team will be concentrating on Corps of Engineers land once arrangements with Corps are complete.

Chloride readings between 1000-7000 ppm at interceptor trenches 6 and 7. 5600 ppm at interceptor trench 14.

Chloride readings from consultants:

Site #405: 1021 ppm

Site #406: 1689 ppm

Site #409: 1505 ppm

Site #410: 1392 ppm

Site #407: 1021 ppm

Site #411: 1392 ppm

Site #SC103: 1021 ppm

Site #BC200: 1759 ppm

Left site at 10:15 to take field readings and samples.

Field readings and samples taken at sites #115-121.

Date: 2/19/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

2/19/2015 at 9:30, on location. Met with consultants and Summit personnel.

Continued access issues have further delayed data collection east of Highway 85. Three new sumps installed. Geoprobings focusing on unnamed tributary to Blacktail Creek, southeast of release site. 600 tons of impacted material removed from containment yesterday and taken to Secure disposal.

Chloride readings from consultant:

Site #405: 1689 ppm

Site #406: 1689 ppm

Site #407: 2585 ppm

Site #409: 1554 ppm

Site #411: 1209 ppm

Site #103: 2012 ppm

Site #BC200: 1850 ppm

Site #106: 1703 ppm

Left site at 10:30 after consultations with consultant.

Field readings and samples taken at sites #106, 109, 110, 111, 114, and 200. Could not get readings or a sample at site #108 due to a lack of recoverable liquid.

Samples also taken at two tributaries to Blacktail Dam.

Date: 2/21/2015 **Status:** Inspected; More Followup Required **Author:** Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Summary for actions on 2/21/2015.

Two additional interceptor trenches were plumbed and are pumping impacted groundwater, bringing the total number of interceptor trenches to 17 that are plumbed with dedicated frac tanks to receive the pumped water. Three more interceptor trenches remain open and are being regularly pumped by vac trucks.

Continued to haul impacted soil that has been excavated.

Secondary containment built around 10 of 17 lighting towers in case of spill from fueling.

Continued pumping from all interceptor trenches.

Due to cold temperatures, icing problems were encountered during earlier pumping from creek, leading to a reduction of creek water being pumped.

2/21/15 chloride readings

SW 405 - 440 ppm
SW 406 - 1011 ppm
SW 407 - 541 ppm
SW 409 - 1287 ppm
SW 410 - 1097 ppm
SW 411 - 717 ppm
SW 416 - 1110 ppm

BC103 - 483 ppm
BC 200 - 1209 ppm

More followup is necessary to monitor continued cleanup efforts.

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Summary for actions on 2/22/2015.

Groundwater extraction now exceeds surface water extraction.

25 truckloads of impacted water hauled today.

Began designing road to extraction well for easy access during spring and summer when soft soil conditions exist.

Impacted soil removed from secondary containment area totals 4107 tons.

Continued pumping from all interceptor trenches.

Due to cold temperatures, icing problems were encountered with continued pumping from creek.

2/22/15 chloride readings

SW 405 - 784 ppm

SW 406 - 1111 ppm

SW 407 - 784 ppm (water pumped today)

SW 409 - 857 ppm

SW 410 - 1111 ppm (water pumped today)

SW 411 - 857 ppm

SW 416- >6536 ppm (water pumped today)

BC103 - 936 ppm

BC106 -1430 ppm (large quantity of water pumped today)

BC108.1 - 2175

BC 200 - 1430 ppm (water pumped today)

More followup is necessary to monitor continued cleanup efforts.

Date: 2/23/2015 **Status:** Inspected; More Followup Required **Author:** Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Summary for actions on 2/23/2015.

Ice removed at SCD #4 to analyze water flow.

Began to install interceptor trench #21; trench expected to be operational by Wednesday.

Remodeling SCD #3 to increase underflow capacity.

Small amounts of oil removed via hand shovel at 39, 46, 47 and 59.

Operations continue as usual.

2/23/15 chloride readings

SW 407 - 434 ppm

SW 409 - 936 ppm

SW 410 - 1111 ppm (water pumped today)

SW 411 - 652 ppm

SW 413 - >6536 PPM (water pumped)

SW 416 - 652 PPM

BC103 - 483 PPM

BC200 - 1500-200 PPM (water pumped today)

BC106 - 1554 (water pumped today, periodically pumped dry)

More followup is necessary to monitor continued cleanup efforts.

Date: 2/24/2015 **Status:** Inspected; More Followup Required **Author:** Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Summary for actions on 2/24/2015.

Piezometer surveyed.

SCD #3 remodeled to increase underflow capacity.

Work continues on interceptor trench #21

Reduction to 20 trucks.

Small amounts of oil removed via hand shovel at 46.

Operations continue as usual.

2/23/15 chloride readings:

SW 407 - 483 ppm

SW 409 - 592 ppm

SW 410 - 1111 ppm (water pumped today)

SW 413 - >6536 PPM (pumped dry)

SW 416 - 4118 PPM (pumping)

BC103 - 652 PPM

BC200 - 936 PPM

BC106 - 1430 (water pumped today)

More followup is necessary to monitor continued cleanup efforts.

Date: 2/25/2015 **Status:** Inspected; More Followup Required **Author:** Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Summary for actions on 2/25/2015.

Permits in line for the construction of SCD #4, which will begin ASAP.

Work continues on interceptor trench #21. Water sampled at location.

Small amounts of oil removed via hand shovel at 62.

Watching water pumping trends to better coordinate the number of vac trucks on location.

Operations continue as usual.

2/25/15 chloride readings:

SW 407 - 344 ppm

SW 409 - 1111 ppm

SW 410 - 1315 ppm (water pumped today)

SW 411 - 592 ppm

SW 413 - >6364 PPM (water pumped today)

SW 416 - >6364 PPM (water pumped today)

BC103 - 312 PPM

BC200 - 652 PPM

BC106 - 1021 (water pumped today)

More followup is necessary to monitor continued cleanup efforts.

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Summary for actions on 2/26/2015.

Construction began on SCD #4.

Interceptor trenches #7 and #21 are up and running.

Soil testing underneath temporary containment dike.

Continued work on access road before spring melt.

Samples taken by NDDOH at 106, 109, 114, 119, and 200.

Operations continue as usual.

2/26/15 chloride readings:

SW 407 - 249 ppm

SW 409 - 857 ppm (water pumped today)

SW 410 - 1021 ppm (water pumped today)

SW 411 - 483 ppm

SW 413 - >6364 ppm (water pumped today)

SW 416 - >6364 ppm (water pumped today)

BC103 - 269 ppm

BC200 - 652 ppm

BC106 - 1552 ppm

More followup is necessary to monitor continued cleanup efforts.

Date: 2/27/2015 **Status:** Inspected; More Followup Required **Author:** Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Summary for actions on 2/27/2015.

Construction continues on SCD #4.

233,202 barrels of water pumped to date

Continued work on access road before spring melt.

Operations continue as usual.

2/27/15 chloride readings:

SW 407 - 239 ppm

SW 409 - 784 ppm

SW 410 - 1209 ppm (water pumped today)

SW 411 - 434 ppm

SW 413 - >6364 ppm (water pumped today)

SW 416 - 231 ppm

BC103 - 214 ppm

BC200 - 936 ppm

BC106 - 1430 ppm (water pumped today)

More followup is necessary to monitor continued cleanup efforts.

Date: 3/2/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 13:00. Spoke with operations manager and received update on operations. Pumping of the Blacktail Creek continued with a drawdown to almost empty at the oxbow to the confluence. Trucking and hauling of water from the interceptor trenches continued with an approximate 6000 barrels of water being removed from the trenches and creek daily.

Soil sampling had also been completed within existing containment cell and around initial release area. Results of the sampling to be reported on 3/20/15.

Attended teleconference with NDDoH, Summit and consultants at 15:00. Reviewed continued operations and a possible agreement with the landowner to install interceptor trenches at the oxbow within the next couple days. Consultant also proposed eliminating EC testing (relying on chloride strips) for water removal areas to fast-track truck planning.

Collected field measurements at Site 109 (EC - 2790 us/cm, Cl - <33ppm), Site 200 (EC - 14,890 us/cm, Cl - 1097 ppm). Attempted to collect a field measurement at Site 106, but the liquid water had been removed via vac trucks, leaving only frozen ice at the location. More followup required.

Date: 3/3/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Attended morning operations meeting with consultant representatives at 9:30.

Operations manager reviewed creek areas that were still being pumped (SW-413, SW-409, SW-200, SW-416 and SW-410) via vac trucks. SW-106 contained no water and was being monitored for future water removal. Two more interceptor trenches were being constructed south of IT-3 (along "land bridge" drainage area) and will be labeled as IT-22 and IT-23. All installed and operational interceptor trenches were removing groundwater (except IT-6, IT-8 due to low chloride measurements).

Summit representatives were meeting with the landowner near the oxbow and believed an agreement would be reached by tomorrow, in which case two interceptor trenches would be constructed near the west and east portions of the oxbow.

Rig mats were being installed for access to the SCD-4 location, and installation continued along paths to frac tanks west of Highway 85.

Collected field measurements at:

Site 109 @ 16:15 (EC - 3660 us/cm, Cl - < 33 ppm)

Site 106 - no measurement taken due to lack of stream water

Site 200 @ 17:03 (EC - 15,180 us/cm, Cl - 1188 ppm)

Date: 3/4/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 9:00. Attended operations meeting at 9:30.

Operations manager discussed the continued pumping from the stream and interceptor trenches. Rig mats were continuing to be delivered and installed west of Highway 85 to gain truck access to the interceptor trenches and to SCD-4 (completed today according to 18:00 meeting).

Discussion on the installation of the sheet pile wall included delivery of equipment on March 16 with a planned completion date of 3/19/15. They also discussed the stockpiling of oil-absorbent booms for higher water flows when temperatures begin snowmelt.

No field measurements were completed.

More followup required.

Date: 3/5/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Attended operation meeting at 9:30. Discussions during the meeting included:

- Construction of a new decontamination area near the containment cells.
- Site map for haulers to navigate location more efficiently.
- Bridge over SCD-1 near completion.
- Oil shark oil-absorbent pads installed upstream of SCD-1 and plans to install more in other SCD locations for snow melt and added runoff.
- Continuing with rig mats for vehicle transport.

End of day meeting with operations manager:

- USGS installed a stream gauge east of Hwy 85, west of the oxbow on Blacktail Creek, that will monitor EC levels and water levels.
- Stream flow will also be monitored when more liquid is moving in channel.

Water samples for DRO, Group 190 and field measurements were collected at the following locations:

- 119 - (Field EC - 3370 us/cm, Cl - 63ppm)
- 114 - (Field EC - 3230 us/cm, Cl - <33 ppm)
- 109 - (Field EC - 2550 us/cm, Cl - <33 ppm)
- 106 - (Field EC - 11,170 us/cm, Cl - 1759 ppm)

More followup required.

Date: 3/6/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Met with operations manager at 9:00. Discussed current operations and plans for the weekend. The operations manager indicated that they were going to have the extended arm excavator delivered today. This will allow them to remove booms from the creek and install shark oil booms near SCD locations. They were also constructing a berm along IT-4 to contain high water. An extra extraction trench was also in the plans near the release to draw more water when the melt occurs. They were continuing on road construction, especially near Highway 85 for entrance to the site. They had purchased a sweeper to clean debris off Highway 85. Pumping and hauling of interceptor trenches and the stream remain at normal status. More followup required.

Date: 3/9/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

3/9/2015 at 9:30, on location. Met with site personnel.

Site updates: Due to high temperatures, meltwater has increased creek level to overtop all dams at site.

Vegetation had been washed down and scraped down to roots where possible (before water levels rose) to keep oil sheen to a minimum. However, there is still a sheen visible near site of original release.

Multiple sets of booms in place are collecting oil as it flows downstream, and three hydrovac trucks (with a fourth on the way) are removing oil from behind booms. Some upstream booms have been washed away, but currently enough booms are holding that recovery of oil is possible.

Additionally, equipment for installing sheet pile wall is being mobilized, and installation is to begin sometime next week.

Chloride readings from creek:

407: <33 ppm

409: <33 ppm

410: <33 ppm

411: <33 ppm

413: 46 ppm

416: <33 ppm

BC103: <33 ppm

BC109: <33 ppm

BC200: <33 ppm

Date: 3/11/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

3/11/2015 at 9:30 on location. Met with site personnel.

Site updates: Mat road and sump construction underway on property to east of Highway 85. Mat road complete to railroad bridge.

Hydro vaccing with four trucks still underway at booms across Blacktail Creek to remove hydrocarbons behind booms.

Sheetwall installation still planned for next week.

Date: 3/23/2015 **Status:** Inspected; More Followup Required **Author:** Wax, Pete

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

On site 0930, off site 1600, cloudy to partly cloudy, 25 to 40 degrees, light winds. Participated in morning safety meeting and Shoreline Cleanup Assessment (SCAT). Reviewed Blacktail Creek segments upstream of spill to segment 36+00. No oil or indication of oil found upstream of segment 28+00. Segments 28+00 to 36+00 (near release area) had varying percentages of surface oil and oil residues ranging from none to 40%. These segments also had varying degrees of coating from staining to coat to cover, with the majority of it being either stained or coated.

Date: 3/26/2015 **Status:** Inspected; More Followup Required **Author:** Wax, Pete

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Cleanup, pumping, and associated operations continuing. Construction of coffer/barrier structure in progress. Landowner negotiations ongoing. SCAT surveys in progress. Participated in SCAT in the afternoon (requires 100% ground visibility, so no snow or frost can be present). Lower reaches of the Blacktail Creek had some erratic patches of hard crude (on vegetation, not ground) equaling less than 1 percent per section. 100% of this was cleared, bagged, and disposed of.

Date: 3/31/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

3/31/2015 at 9:30, on location. Met with personnel for daily meeting. Site updates: East of Highway 85, four loads at ~70 bbl per load taken out of IT 27 and 28, as well as one load from 413. Currently upgrading roadway in this area. Vegetation cutting complete in this area. To the west of Highway 85 (closer to the actual release point), the sheet wall is being installed. A total of 310 feet have been installed so far. All sumps except 6-8 and 25 are working. Still cutting and raking vegetation in this area. SCAT is finishing up this section today or tomorrow, and a group will be going with US Army Corps of Engineers personnel on a boat to check the backwater confluences of the Little Muddy and Missouri rivers.

Date: 4/2/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

4/2/2015 at 9:30, on location. Met with site personnel for daily meeting. Site updates: Continuing to pump from IT 27 and 28 as well as 413. Pumping also continuing from all sumps except 25. Wall installation has been postponed due to high winds.

Chloride readings taken by site personnel:

SCD 3 = 30 ppm

BC 200 = 37 ppm

BC 109 = <30 ppm

SCD 4 = 72 ppm

SCAT team finished a walkthrough with ND Game & Fish personnel yesterday.

Date: 4/6/2015 **Status:** Inspected; More Followup Required **Author:** Cooper, Mike

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

3:00 p.m. - Arrived on site, temperature 39 degrees, wind 10-15 mph NW. Got a site tour of the Blacktail Creek area by Stantec representative. Also walked the shoreline with SCAT team, viewing what they have done with the shoreline in all sections. Sections 0-26 - no observed oil or surface contamination. Sections 28-96 - surface contamination very visible. Visible sheen present on water as well as on the banks of creek. Plan for next day is to photo-document each section in 28-96. Also pulled 200 bbls of water out of extraction well 5 and disposed of. General site maintenance will continue, i.e., replacing absorbent boom, shark fence, removing contaminated vegetation, etc.

Date: 4/7/2015 **Status:** Inspected; More Followup Required **Author:** Cooper, Mike

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

9:00 - Arrived on site for site safety/ops meeting. 1-2 inches of snow were recorded in the area near Blacktail Creek. Photo documentation will be difficult with snow cover. Will have to wait for another day to document. General maintenance will continue throughout the site, i.e., replacing boom, shark fence, contaminated vegetation, etc. Construction company has completed 310 ft of steel containment wall and is looking at completing the 800-foot-long wall by the end of today. Work on/near the Larry Ness property has been completed. Work near the Ron Ness property is still ongoing.

Date: 4/8/2015 **Status:** Inspected; More Followup Required **Author:** Cooper, Mike

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on site at 8:00 a.m. Temperature at 37 degrees, wind 0-5 mph WNW. Update on site activities: Two loads of impacted water were taken from Units 127, 128, and the creek; loads disposed of. General maintenance (boom replacement, vegetation removal, and shark fence replacement) was initiated as well. Assisted SCAT team in shoreline surveys in Sections 120-144. Some sections displayed signs of intermittent oil in soil along shoreline and in vegetation. Also stopped and spoke with Larry and Joanne Njos about possible remediation options and techniques available for cleanup on east side of Hwy 85. Water testing on monitoring wells is trending downward towards zero, with slight fluctuations in levels in SCD3, DC200, and BCD4.

Date: 4/9/2015 **Status:** Inspected; More Followup Required **Author:** Cooper, Mike

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on site at 8:30 a.m. Temperature 48 degrees, wind 15-25 WNW. Larry Njos has approved work to start on his property. SCAT crews are currently working on cutting vegetation and disposing of material. Loads will continue to be pulled from Unit 413, 127 and 128. Industrial has completed the length of the wall put in place. They are currently in the hammer stage of making the wall reach target depth. General maintenance will continue on site, replacing boom and shark fence. Samples were taken from all five of the NDDoH sampling points. Also walked shoreline with SCAT team rep in sections 242-272; nothing to report.

Date: 4/13/2015 **Status:** Reviewed; Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 17:15. Met with representatives of the consulting company to discuss the week's objectives and schedule. Set up meeting and observation of SCAT areas on 4/14/15. Departed location at 17:45. More followup needed.

Date: 4/14/2015

Status: Reviewed; Followup Required

Author: O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 11:00 a.m. 61 degrees F, SE wind 10-15 mph, partly cloudy. Traveled to SDC-4, observed water clarity and took photos. No petroleum sheens, staining or emulsified oil noted upstream or downstream of dam. Met with the Shoreline Containment Assessment Technique (SCAT) leader to observe, take photos, and accompany to areas along creek that were bullet points for their survey. Traveled and walked with SCAT leader from the point of release to the 144+00 location. Photos were taken while observing. Collected field EC, temp and CI readings at Site #109 (EC - 2110 us/cm, Temp - 13.5 C, CI - <33 ppm). Site #106 (EC - 3320 us/cm, temp - 13.3 C, CI - 206 ppm). Site #200 (EC - 1330 us/cm, temp - 15.4 C, CI - 161 ppm). More followup required, and additional observation and discussions with EPA representative tomorrow 4/15/15.

Date: 4/15/2015

Status: Inspected; More Followup Required

Author: O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 8:30 a.m. Sunny, 51 degrees F, south wind 5-15 mph. Attended review meeting at 9:30 a.m. with consultant representatives and EPA representative. Inspected Blacktail Creek for petroleum impacts with SCAT leader and EPA representative from release point (28+00) to D 4+00 location. Photos taken and observations made during the inspection. Observations made during the inspection: Location 32+00 - Petroleum impacts were noted in the soil at the edge of the creek releasing a sheen of hydrocarbons on to the surface of the creek. Location 34+00 to location 62+00 showed light brown staining on the cut stems and layed-down vegetation in collection areas that had been inundated with the higher creek levels earlier in the year. The petroleum impacts in these areas appeared to be contained to the vegetation and surface of soil. Two oil capture fences ("shark fences") and booms were placed vertically from each side of the stream bank in this area to collect any oil sheen. The fences appeared to be removing any sheen moving into the capture system. A darker staining and stronger odor of petroleum impacts was noted along the steep banks (approximately 1 to 2 feet in height on the creek banks) from 62+00 to 68+00. One shark fence was erected near location 68+00. The fence appeared to be containing any sheen upgradient of its location. From 68+00 to 86+00, impacts appeared to be minimal and contained to the cut vegetation and upper surface of soil on terraces where the water level had been earlier in the year. No oil sheen was noted on the creek surface downgradient of the shark fence located at 68+00. Some terrace areas and side banks vegetation showed a slight staining from 68+00 to D 1+00. The staining was slight and did not appear to contribute to any further hydrocarbon sheening of the creek. Two more shark fences were stationed at location 138+00 and D 2+00. More followup needed.

Date: 4/16/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Attended review meeting at 9:30 a.m. with Summit representatives and EPA representative. Inspected Blacktail Creek for petroleum impacts with SCAT team leader and EPA representative from marker 176+00 to marker 214+00, north side of the creek downstream and south side of the creek upstream. Photos were taken while inspecting. No petroleum impacts were noted in or along the stream banks in this stretch while observing. In the next few weeks, the responsible party will provide a report to the NDDoH regarding the current status and proposal for continued monitoring and maintenance of the creek for the SCAT team work plan. Four soil samples were collected for laboratory analysis from areas near the creek at 0-8 inches in depth and 8-16 inches in depth. SS-1A and SS-1B were collected at GPS coordinates 48.40150, -103.63294. SS-2A and SS-2B were collected at GPS coordinates 48.40178, -103.63908. SS-3A and SS-3B were collected at GPS coordinates 48.40320, -103.64087. SS-4A and SS-4B were collected at 48.402447, -103.639556.

Date: 4/23/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

4/23/2015 at 9:30, on location. Met with site supervisor for daily meeting.

Updates for the week:

The rig mat road has been taken out in one section and replaced with a temporarily constructed road in order to remove the rig mats from the site. Depending on how the constructed road holds up, the road will either be expanded or the rig mats will be placed back in. Elsewhere, truck traffic issues are being discussed with a landowner.

Chloride readings:

IT-29 = 29,000 ppm

SCD3 = 172

BC200 = 256

BC109 = <31

SCD4 = 256

Sumps with low chloride levels have been throttled back unless chloride levels increase.

Date: 5/13/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

5/13/2015 at 9:30, on location. Met with site personnel to view site. Excavations in progress along parts of creek where oil impact was heaviest. Oil sheen coming from banks is visibly reduced. Test roadbed designed to replace rig mat road appears to be holding up; roadbed may be further implemented.

Date: 6/16/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 8:45. Met with the consultants groundwater specialist to collect water samples from monitoring wells located near the release. Collected 6 water samples during the day for group 190 analysis. Field measurements were also taken while sampling:

MW-001 - Cl - <33ppm & EC 2530 us/cm.

MW-008 - Cl - <31 ppm & EC 3525 us/cm.

MW-006 - Cl - >6536 ppm & EC 44479 us/cm.

MW-007 - Cl - >6536 ppm & EC 19289 us/cm.

MW-011 - Cl - >6536 ppm & EC 46986 us/cm.

MW-012 - Cl - 4078 ppm & EC 12678 us/cm.

Sampling of wells will continue tomorrow 6/17/15.

Date: 6/17/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 8:30. 54 degrees F, hazy, SW wind 10-15 mph. Continued with the collection of water samples from monitoring wells near Blacktail Creek. Field results for:

MW - 009 (EC - 17922 us/cm, Cl - >6536 ppm)

MW - 013 (EC - 3404 us/cm, Cl - < 33ppm)

MW - 014A (EC - 4768 us/cm, Cl - <33ppm)

MW - 014B (EC - 4805 us/cm, Cl - < 33ppm)

MW - 019A (EC - 6791 us/cm, Cl - <33ppm)

MW - 019B (EC - 5290 us/cm, Cl - <33ppm)

MW - 020 (EC - 5795 us/cm, Cl - <33ppm)

MW - 010 (EC - 10295 us/cm, Cl - 2615 ppm)

Walked the south bank of Blacktail Creek from marker 114+00 to 128+00, looking for continued petroleum impacts in or near the Creek. No hydrocarbon impacts were noted. Photos were also taken to document the area. Will followup with continued well sampling and creek observations Thursday 6/18/15.

Date: 6/18/2015 **Status:** Inspected; More Followup Required **Author:** O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 9:30. 57 degrees F, Sunny, SE wind 10-20 mph. Continued with the monitoring well sampling with assistance from consultant also collecting samples from the wells. Field readings for:

Field readings for:

MW - 021 (EC - 5978 us/cm, Cl - <33ppm)

MW - 022 (EC - 6041 us/cm, Cl - <33ppm)

MW - 015 (EC - 4714 us/cm, Cl - 63 ppm)

MW - 016 (EC - 5018 us/cm, Cl - 33 ppm)

MW - 017 (EC - 4493 us/cm, Cl - <33ppm)

MW - 018 (EC - 9438 us/cm, Cl - <33ppm)

Walked along the south bank of Blacktain Creek from marker 44+00 to 78+00, identifying continued petroleum impacts in and along the bank. Remediated creek bank did not show any further impacts from petroleum products. No sheen was observed in the water. Some light petroleum staining of dead vegetation and surface soils was noted. The areas with continued impact were limited to the upper tenth of an inch of soil and mostly dead vegetation. Walked along the bank from marker 76+00 to 144+00 with no petroleum impacts noted. Petroleum impacts along the banks will need continued monitoring and oil absorbent fences should continue to be placed downstream of impacted areas to remove any impacted soil or plant materials that might wash into the creek. Continued followup needed.

Date: 7/14/2015 **Status:** Inspected; More Followup Required **Author:** Martin, Russell

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

7/14/2015 at 10:00 a.m., on location. Met with site personnel and toured site. Soil containment cell, used to dewater impacted dirt before removal to disposal site, has some standing water in the cell. According to site personnel it is sucked out by hydrovac truck every night, while during the day it is filled up with soil via dump truck and cuttings/fluids from hydrovacs (from installation of sumps, line excavations, etc.) Cell is currently being filled on the south end by dump truck, with a bulldozer pushing accumulated material to the north. Trucks enter via ramp on the southeast corner and exit via southwest corner. Southeast corner appears stable, ramp has a large amount of dirt around it and does not seem to be impacting the liner and berm beneath. However on the southwest corner, the exit ramp appears to be pushing down into the liner and berm, allowing a visible liquid path to start coming off of the material inside the containment cell. Liquid escaping did not make it any further than the bottom side of the containment cell's berm. Site personnel were sent to address the issue. 2nd containment cell currently empty, awaiting expanded excavation work.